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DIRECTORATE OF
INTELLIGENCE

Intelligence Memorandum

Soviet Heavy Truck Program To Be Long Delayed

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CENTRAL INTELLIGENCE AGENCY
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INTELLIGENCE MEMORANDUM

Soviet Heavy Truck Program To Be Long Delayed

Introduction

The efforts of the USSR in the last 18 months to find a Free World source of technical, managerial, and perhaps financial assistance for its archaic heavy truck industry have met with no success. The large technological gap between the USSR and the United States in the automotive industry generally has been highlighted, as has the failure of central planning organs to develop a balanced machine building industry.

This memorandum examines the intentions of the USSR to improve its truck transportation system particularly in the heavy truck sector, reviews the difficulties facing Soviet industry as it attempts to achieve a rapid expansion in truck output from indigenous resources, and considers the problems and prospects of acquiring technical assistance from the non-Communist world.

New Transportation Requirements

1. [redacted] 25X1
[redacted] the USSR has developed 25X1
a comprehensive plan for the development of its transportation systems for the next 15 years. The plan is based on estimated requirements for the movement of raw materials and goods during that period. While a need is seen for larger numbers of

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trucks of all sizes, the most ambitious program is for the construction of a new plant to produce 150,000 heavy trucks a year.

2. The heavy trucks are to be diesel-powered for best fuel economy, will have three axles, and will have cargo capacities of 8 metric tons for unimproved roads and off-the-highway operations and 11 metric tons for operation on pavement. These capacities equate to gross vehicle weights (GVW) of about 33,000 pounds off the highway and 40,000 pounds on the highway, respectively, as conventional trucks. The gross combination weight (GCW) of the trucks used as tractors drawing semitrailers on paved roads could go close to 70,000 pounds. Compared with the Soviet plan to produce 150,000 heavy trucks annually, the United States produced only 117,000 trucks of this class in 1969. However, US production of heavy trucks is increasing rapidly, and the 1969 inventory of three-axle trucks in the United States (some lighter and some heavier than the proposed Soviet trucks) amounted to about 860,000.

3. The Soviet planners foresee a number of new transportation requirements for which large trucks and truck-trailer combinations provide the optimum solution. Long-distance intercity motor freight movements are increasing, and the Soviet plans for an extensive system of improved paved highways between the major cities, when carried out, will vastly increase the demand for large truck-trailer combinations in this service. Another need for large trucks will be to handle the trailer-size containers which are finding ever wider use in international shipping services. Larger trucks will reduce the rate of growth of the numbers of truck drivers required.

4. Soviet planners foresee a very large increase in truck transportation in the tundra and permafrost areas, where gas, oil, and mineral deposits are being developed. Because railroad construction in such regions is beset by serious and expensive engineering and maintenance problems, it will be held to a minimum. Presently, air and water transportation are the principal transportation means available. Water

transportation is seasonal and not available in all directions, and air transport is expensive. Truck movements, however, can be maintained on graveled roads (like the Alcan Highway) during all seasons. Truck transport is especially feasible in the Soviet north in the winter, when swampy ground is frozen. Because the major part of their road system consists of unimproved dirt roads, the USSR proposes to equip many of the new heavy trucks with all-wheel drive.

Current Production of Heavy Trucks

5. The Kremenchug Motor Vehicle Plant (KRAZ) produces three-axle diesel-powered trucks in cargo, dump, and truck-tractor variants which have about the cargo-carrying capacity proposed for the new series of trucks. In 1969, KRAZ produced about 17,000 trucks.

6. The KRAZ trucks are not an economical design. Developed from US Army World War II heavy prime movers which were supplied to the USSR under lend-lease, these trucks are used for towing heavy industrial and construction equipment on lowboy trailers, as military prime movers, and as dump trucks working with 3-cubic-meter shovels. However, they are now obsolete and uneconomical by Western standards. For example, the most recent KRAZ model, the KRAZ-256, has a chassis weight of 21,117 pounds and a GVW of 47,400 pounds. This can be compared with a typical three-axle US truck (the Mack DM-800) which has a chassis weight of 18,426 pounds and a GVW of 66,000 pounds: the US truck is 2,700 pounds lighter than the KRAZ and its payload is 18,600 pounds heavier. Both vehicles are rated for the same kind of service. This technological backwardness is prevalent throughout the Soviet automotive industry and explains why the USSR is seeking foreign assistance in the design of heavy-cargo trucks.

7. The Soviet planners have selected Naberezhnyye Chelny on the Kama River near its confluence with the Volga as the site of the new truck plant. This location is convenient to railroad, inland waterway, and highway transportation and to major electric power stations, and is within the Volga Basin, where lies most of the Soviet automotive industry. It is to be called the Kama Motor Vehicle Plant and is

unrealistically scheduled for completion by the end of 1974. During 1970, [redacted] only about $12 million will be spent on preparation of the site. 25X1 25X1

Efforts to Obtain Free World Assistance

8. The requirements of the Kama plant for tools and equipment are superimposed on those of current major projects for expanding truck production in the ZIL, GAZ, and UAZ truck plants. These projects are lagging seriously, in large part because of inadequate support from the Soviet machine building industry. Consequently, the 1970 goal for truck production, which was set early in the present five-year-plan period (1966-70) at 600,000-650,000 trucks and subsequently raised to 750,000, is not being approached. The plan for 1970 has had to be revised downward to 527,000 trucks.

9. The USSR can provide from domestic sources the buildings, utilities, and some production equipment for the Kama plant. However, the USSR desires to purchase most of the production equipment, estimated to cost at least US $500 million from foreign sources. Further, the USSR recognizes that if the new trucks and the design and layout of the production facility are to incorporate the latest technology, Free World technical assistance will be required. From negotiations, it appears that the USSR is especially anxious to obtain from abroad: (1) the complete foundry (it will be the largest in the world), (2) design data and licenses for parts and assemblies such as axles and engines, and (3) assistance in procuring and financing large amounts of Free World production equipment. The USSR would like to negotiate a contract with a Free World firm which, either on its own resources or at the head of a consortium, could provide all of the needed equipment and services. To date, all efforts to reach such an agreement have failed.

10. The USSR has approached Ford and Chrysler in the United States, the British Leyland Motors Corporation in the United Kingdom, Daimler (Mercedes)-Benz of West Germany, both Renault and Berliet in

France, FIAT of Italy, Volvo of Sweden, and Isuzu, Hino, and Toyota of Japan. The principal reasons to date for rejecting the Soviet request for help are twofold: (1) the scope of the project requires more engineering and management talent than any one of the Free World firms can release from their own operations, and (2) the USSR wants long-term financing. It is, of course, possible that in the future a Free World consortium may be put together by an enterprising automotive manufacturer to meet the Soviet requirements for foreign assistance.

11. Participation in the establishment of the Kama truck plant provides little opportunity to any Free World automotive firm for corporate growth or enlargement of its markets. The assisting firm would be required to expand its engineering and management staff on a temporary basis. In the process of helping the USSR, its engineering and managerial talent is likely to be spread too thin over its own primary operations. [redacted] 25X1 [redacted] FIAT faces this problem as a result of 25X1 helping the USSR with the Volga plant [redacted] 25X1 [redacted] Daimler-Benz 25X1 proposed as a condition for assisting the USSR that the USSR buy heavy Mercedes trucks while the Kama plant is under construction. Despite its great need for such trucks, the USSR would not accept that condition, which contributed to the failure to reach agreement.

12. Except for Ford, none of the Free World firms approached by the USSR were attracted by the suggestion that they take some of their compensation in the form of trucks to be produced by the plant. Ford considered selling (in the West) Soviet trucks built to its specifications, and purchasing Soviet-made components for its European truck production.

Need for US Cooperation

13. When the Soviet government approached Chrysler and Ford early in 1970, using the State Committee for Science and Technology as intermediary, the possibilities of assistance from Western Europe had already been extensively explored. From the beginning, the Soviet automotive industry had wanted

US help with the Kama project, but the leadership had been reluctant to risk the embarrassment of rejection of a direct request for assistance. Their decision, finally, to approach Chrysler and Ford is a measure of the dominant position of the United States in automotive technology.

14. It is clear that if US assistance is denied the USSR, construction of the Kama plant will certainly have to be scheduled for a much longer period. Equipment which the USSR apparently considers highly desirable if not essential must be imported from the United States or from US subsidiaries and licensees in Western Europe. This equipment includes foundry machinery and machine tools for cutting gears and for machining engine parts.

15. Unquestionably, the monopoly position of US automotive technology is an important factor in the USSR's extension of the contract acceptance date, month after month, for about $25 million worth of US gear cutting machines required for the expansion and modernization of the ZIL, GAZ, and UAZ truck plants. While it has been important for the modernization of existing Soviet truck plants to persuade the United States to relax its trade controls on gear cutting machines, of even greater importance have been the requirements for US technology in the projected Kama plant.

Preference for US Technology

16. The USSR's strong preference to base the Kama plant on US technology has been evident from the inception of the heavy truck program. Premier Kosygin indicated to Robert McNamara in December 1968 Soviet interest in US assistance in the plant's construction. Kosygin had hoped McNamara would relay his interest to the US automotive industry and save the USSR the embarrassment of being turned down in a direct approach to a US firm.

17. In November 1969, V. Smoline, an official of the Ministry of the Motor Vehicle Industry, who was in Geneva as a member of the Economic Commission for Europe (ECE) Working Party on the Construction of Vehicles, told a US official that the USSR looks to the United States as a model for planning. He

asked whether the United States would be willing to provide technical advice on the mass production of 150,000 diesel trucks of the type used with semi-trailers in the United States. He wanted to know whether the US Government would permit the sale by US firms of all or part of the manufacturing equipment necessary to produce the trucks and trailers, including equipment for making diesel engines, axles, and all the other components. Stressing that his inquiry was unofficial, he requested an informal, personal response from the official by March 1970.

18. Other Soviet officials have stated that the USSR favors the use of US automotive technology because of the large US industrial capacity, US experience with a wide variety of climatic conditions, and its highly developed technological and organizational capabilities.

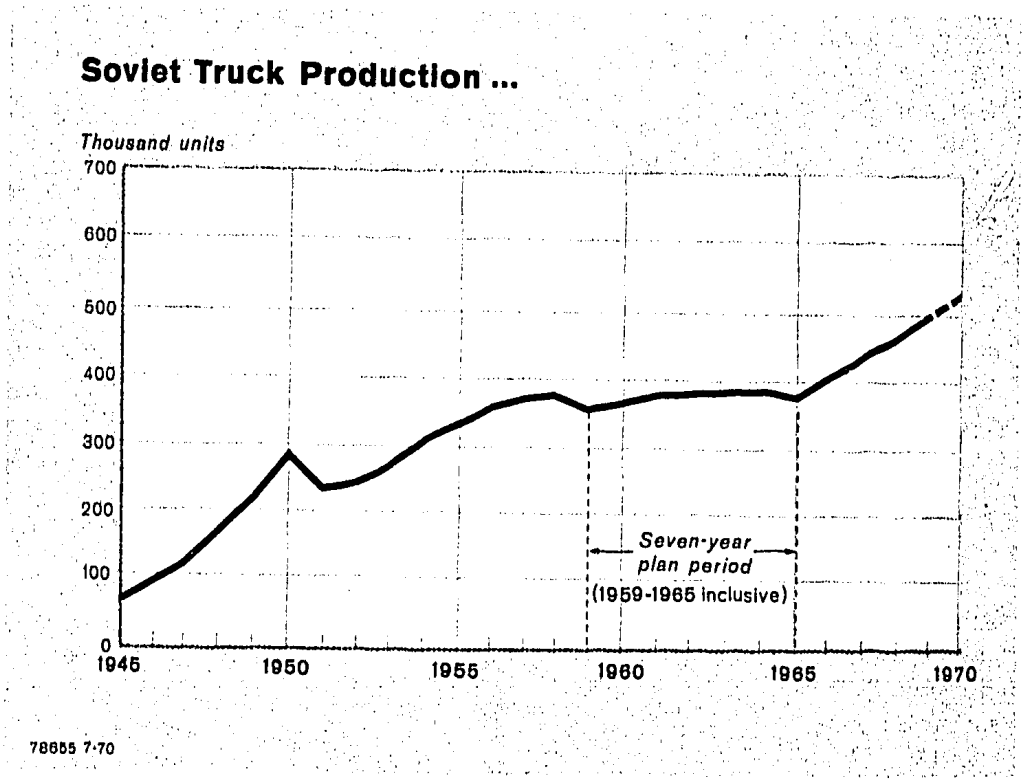
19. Soviet truck technology is now based on US practice. Soviet truck designs are adaptations of US designs. The Soviet automotive industry was only started in a practical way when Ford Motor Company equipped the GAZ plant with surplus Model "A" tooling during the first five-year plan. The Moscow ZIL plant only became a significant truck producer when it introduced a copy of a US truck in 1933. These were the principal products of the truck industry until the end of World War II. During World War II the USSR received more than 400,000 US trucks under lend-lease. In addition to forming the backbone of the Soviet truck inventory immediately after the war, these vehicles have provided prototypes for most of the components of the trucks produced by the USSR since the end of World War II.

20. A very significant factor in Soviet interest in US technology is the recognition that the United States is like the USSR in having a large land mass and the potential need of a large truck park. They can find in the US experience the solutions to technological problems in the production and operation of heavy intercity highway trucks. As Kosygin made clear to a US automotive industry executive last April, the USSR does not yet know exactly what characteristics its new trucks should have and it would like US advice.

Central Planning Fails the Automotive Industry

21. The present problems faced by the USSR in trying to enter the modern truck age in one gigantic leap underscore the imbalances that inevitably develop under Soviet centralized planning and priority setting. The automotive industry has received a low priority for many years. Hence, it does not contain within itself the technical know-how needed to modernize its product or its production facilities. Furthermore, the Soviet machine tool industry is incapable of providing the equipment needed to build a modern, efficient truck plant. Central planning in the USSR has not led to balanced growth of the economy -- if there are to be "leading links" there must be "lagging links."

22. Soviet truck production grew at a near-stagnation pace from 1950 to 1970 (see the chart).



The average annual rate of growth over the 20-year period was nearly 3%. During the seven-year plan (1959-65) there was no significant growth in truck output. In the immediate postwar period (1946-50) truck production had been assigned a high priority and tripled in four years. However, with the outbreak of the Korean conflict, the truck industry lost its priority to industries of more pressing military application.

23. Modernization and expansion of Soviet truck plants has proceeded slowly in the years since the end of World War II. Some Free World (but not US) machine tools and equipment have been purchased, but the domestic machine tool industry has been relied on for most of the automatic transfer lines and other specialized machines. An executive in the US automotive industry recently was able to tell Kosygin that the ZIL truck plant, a Soviet showplace, was antiquated, with about half the automation found in similar US plants. The Soviet machine tool industry has been organized to provide general purpose tools in large numbers at the lowest possible cost. Its capability to support the motor vehicle industry with specialized equipment is small, largely because the motor industry's priority has been low.

24. Central planning also results in the setting of unrealistic goals for bringing new plants into operation. The present plan for Kama to produce trucks of new design, solely from domestic parts, in four years from ground breaking is highly unrealistic. Even with extensive foreign assistance, Western experts believe it would take from six to seven years to be self-sufficient in parts production. And if the USSR is forced to produce virtually all of the needed production equipment itself, a 10-year span from initiation of construction to full production would not be unrealistic.

Evaluation of Soviet Plans for Truck Transportation

25. The Soviet plan to increase capacity for the production of very large trucks from the present level of about 17,000 per year to 150,000 per year by the end of 1974 belies the assertion that the Soviet system leads to the planned proportional development

of all sectors of the economy. Poor planning has led to a situation in which development of all sectors of the automotive industry -- from heavy trucks to light passenger cars -- has gotten seriously out of proportion.

26. Coupled with the fact that Soviet railroads are short of rolling stock has been the recognition that for many freight movements, where distances are relatively short or the cargo perishable or the need for delivery urgent, truck transportation is more efficient than combined truck-rail transportation.

27. At present, the Soviet truck inventory is estimated at about 4.5 million vehicles, of which more than 80% have cargo capacities of less than 5 tons. In contrast, more than half of the total volume of shipments by motor freight consist of consignments totaling more than 5 tons, [redacted] truck-trailer combinations for hauling loads of 8, 16, and 25 tons should represent 15%-20% of the total park, making it possible to double or triple the labor productivity of truck drivers. 25X1 25X1 25X1

28. Truck-tractors probably will not be the predominant form of product from the Kama truck plant. As the present grossly inadequate Soviet truck park is enlarged there will be great advantages to increasing the share of very large dump trucks and cargo trucks in the inventory. Only about one-third of the truck cargoes in the USSR in 1966 were industrial and trade cargoes, the type most suitable for intercity movement by truck-trailer combinations. About 30% were cargoes for the construction industry and about 25% were for agriculture. This traffic tends to be short-haul and to use straight trucks, especially dump trucks. Most Soviet dump trucks presently used in construction work are of less than 5 tons in capacity. The Kama trucks with an 11-ton capacity, which can accept loads from 3-cubic-meter excavators, will reduce the requirements for additional drivers, currently in short supply in the USSR, and increase the productivity of the construction industry. In agriculture, where average hauls presently are longer than in any other sector, driver productivity

can be greatly increased by the use of larger trucks. However, the introduction of these trucks into agriculture will have to be accompanied by the strengthening of bridges and increased maintenance of rural dirt roads.

29. These considerations suggest the reasonableness of the Soviet plan for a sharp increase in production of heavy trucks even though the problems of road construction and maintenance will be increased. Total requirements embrace more than intercity movement over improved roads in the national highway system. However, the intention of the USSR to equip many of the Kama trucks with all-wheel drive means they will be fitted for operation on muddy roads typical of the Soviet rural areas and construction sites as well as for the difficult terrain in the Soviet north.

30. The Soviet economy can usefully absorb substantial numbers of large trucks from the Kama plant, particularly in view of the serious current shortage of large trucks in the Soviet park. It is estimated that from 1951, when production started, until the end of 1969, only about 120,000 Soviet trucks (produced by KRAZ) in the Kama weight class had been manufactured. Because recent production has been much higher than it was in earlier years, perhaps 100,000 are still in the active park. Whether or not the USSR needs an additional 150,000 Kama-size trucks a year is more difficult to judge.

31. The number of heavy trucks that can usefully be employed by a large industrialized country can be estimated from US use patterns. At the end of 1967, there were 1,138,000 trucks of more than 26,000 pounds GVW registered in the United States. Of the total number of trucks of this weight class registered in the United States in 1969, 860,000 were three-axle trucks, generally similar to the proposed Kama truck. Moreover, US production of heavy three-axle trucks (some lighter and some heavier than the proposed Kama truck) has been growing fairly steadily during the past 10 years, as shown in the following tabulation:

Year	Units	Year	Units
1960	67,216	1965	114,579
1961	60,742	1966	135,364
1962	78,015	1967	115,788
1963	90,932	1968	131,376
1964	93,772	1969	150,687

32. The present Soviet inventory, then, is between 11% and 12% of the US heavy truck park, and USSR output is running about 11% of that in the United States. Soviet requirements are further affected by the relatively low road speeds and the proportionately higher number of trucks tied up in repair. The ability to evaluate the need for 150,000 heavy trucks a year is further complicated by the fact that it may well be 1980 before the Kama plant reaches its planned output level. Growth in the economy by 1980 and a reorienting to movement favoring intercity truck transport could justify the production of heavy trucks at the proposed rate.

33. Almost two-thirds of the more than 1,360,000 kilometers in the Soviet highway system consist of dirt roads on which nearly 40% of truck traffic is moved. The USSR has been surfacing less than 25,000 kilometers of dirt road annually in recent years, and there are still about 900,000 kilometers of dirt road in use. The Soviet road construction industry is short of equipment, asphalt, concrete, and trained labor, and it will be many years before "roadlessness" can be eliminated in the rural areas during the spring and fall wet seasons. These conditions go far to explain the poor average annual performance of Soviet trucks, the emphasis on the production of all-wheel drive trucks for the civilian economy, and the need for trucks in large numbers.

The Size of the Kama Plant

34. No Free World businessman has directly criticized the USSR for its plan to concentrate the production of 150,000 trucks per year in a single plant. Some criticism, however, can be

inferred from comments on the smaller Volga Motor Vehicle Plant at Tol'yatti. Western practice would not result in the construction of a Tol'yatti or a Kama-size facility at one location. Western practice would view these plants as too large, difficult to staff, conducive to traffic congestion, and subject to major work stoppages from accidental causes.

35. The problems of Free World automotive producers which would rule against the establishment of a single complex facility, producing almost all the components required for the assembly of 150,000 trucks a year, are not applicable to the Soviet scene. The USSR is able to mobilize labor and is not so concerned with local labor availability in locating a new industry. Concentrated employment at one site is more feasible in the USSR than in the United States because Soviet workers live in apartment complexes and are carried to work by public transportation. The USSR is not faced with a strike problem in one part of a shop which could cause the closing of a large plant. By geographically concentrating manufacturing operations, the USSR is able to reduce interprocess transportation costs and concentrate control of production.

Conclusions

36. Traditional Soviet investment priorities, which neglected the truck industry, have produced a serious imbalance in the economy. Output is inadequate to meet current restricted requirements. More important, it is grossly insufficient to provide the heavy trucks needed by many Soviet industries and to establish the significant movement of intercity freight by truck, needed to modernize internal transportation.

37. Soviet planners have decided to enter the modern truck age in one gigantic leap by building a new heavy vehicle plant on the Kama River with an annual capacity of 150,000 units. Site preparation for this facility is currently under way. While there is some question of whether such a

large facility is needed, there is no doubt that the Soviet economy can absorb a large number of such trucks for many years.

38. The present Soviet timetable for the construction of the Kama plant is completely unrealistic. It calls for the construction industry to erect the facility within a four-year span -- by the end of 1974. The USSR's domestic machine building industry can provide some of the needed equipment. If the USSR is forced to supply all the equipment needed by the Kama plant, a severe rescheduling of priorities among customers of the machine building industries would be required. Soviet machine tool plants would also have to build types of production equipment not presently made in the USSR. This would prolong the project to at least 1980.

39. The principal truck producers of every major West European country and Japan have been invited to assist in the Kama project. None of these negotiations has been successful. Most recently, Chrysler Corporation and the Ford Motor Company declined to help. There are a number of reasons why Western firms have not been attracted by Soviet offers -- the size of the project would require an inordinate drain of technical and managerial resources for any single firm, the long-term credits desired by the USSR are not attractive, and the proposition is a one-time arrangement with little prospect of follow-on business. It is, of course, possible that in the future a Free World consortium will be put together by an enterprising automotive manufacturer to meet the Soviet requirements for foreign assistance.

40. Unfortunately for the USSR, its problems in establishing the Kama truck plant are complicated by the dominating position held by the United States in the field of automotive production technology. The USSR has learned that without US assistance, or at least the approval of the US government, it cannot obtain all the major items of production equipment, embodying the current state-of-the-art, anywhere in the world. Key highly productive automotive machinery

available in the Free World is made only in the United States. Under present US trade controls, Communist countries cannot buy this equipment for truck production. Furthermore, West European builders of automotive manufacturing equipment have such limited capacity that these firms could not supply the equipment, even in the absence of trade controls, within the Soviet time frame.

41. While the USSR could unilaterally remove some of the problems now barring the acquisition of plant equipment for the Kama facility, such as paying cash for machinery instead of demanding long-term credits, it cannot unilaterally alter US trade controls. Unless there is a US-Soviet agreement to remove present US export restrictions, it is most unlikely that the USSR will enter the heavy truck age in the 1970s.